REMARKS

Claims 1-13 are pending in the application. Claims 1-13 are currently amended. No new matter is added to currently amended claims 1-13. Claims 1 and 9 are independent.

Notwithstanding any claim amendments of the present Amendment or those Amendments that may be made later during prosecution, Applicant's intent is to encompass equivalents of all claim elements. Reconsideration in view of the foregoing amendments and the following remarks is respectfully requested.

Claim 5 is objected to for informalities.

Claims 9-13 are rejected under 35 U.S.C. §112, second paragraph, for being indefinite.

Claims 1-8 are rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,370560 B1 to Robertazzi et al. (hereinafter, Robertazzi). Claims 9-13 are rejected under 35 U.S.C. §103(a) as unpatentable over Robertazzi in view of U.S. Patent No. 4,056,846 to Callahan et al. (hereinafter, Callahan).

These rejections are respectfully traversed in view of the following discussion.

THE 35 U.S.C. §112, SECOND PARAGRAPH, REJECTION

Claims 9-13 are rejected under 35 U.S.C. §112, second paragraph, for being indefinite.

Claim 9 is rejected under 35 U.S.C. §112, second paragraph, because the Office Action asserts that the term "j^{th} instance of the kth function" is indefinite because it is not made explicitly clear in the claim language whether or not this term entails a one to one relationship between an instance and a function." (Office Action, page 2, item 3.a).

Applicant respectfully submits that claim 9 is amended above to recite: "said load determining means calculates a product, for each of j instances, corresponding to each of said inputted signals, where j = 1 to m, and for each of k signal processing functions associated with each of said j instances, where k = 1 to N."

Applicant also respectfully submits that to one of ordinary skill in the art the value of j

need not equal the value of k. This is clearly shown by a cursory examination of Figs 3. Fig. 3 shows in an exemplary manner four instances $j=1$, $j=2$, $j=3$, and $j=4$, where each of the j instances is associated with two functions, f_0 and f_1, corresponding to the k signal processing functions . Hence, during a period of time there may exist j instances, where $j=1$ to m, each of the j instances being associated with functions k, where $k=1$ to N, where j need not equal N.

As is known to one of ordinary skill in the art and as discussed immediately above, j and k are integers over the ranges of 1 to m and 1 to N, respectively.

Claim 9 is also rejected under 35 U.S.C. §112, second paragraph, because the Office Action asserts that the term "adding an estimate" in line 24 is indefinite because it is not explicitly clear whether this estimate is the same as the estimate in line 12." (Office Action, page 2, item 3.b).

Applicant respectfully submits that claim 9 is amended above to recite: "(e) adding ~~an estimate~~ another estimated amount of the processing resource needed to support background processing."

Applicant also respectfully submits that claim 11 is amended to correct a typographical error and now recites the proper antecedent claim, i.e., claim 9.

For at least the reasons outlined above, Applicant respectfully submits that claims 9 and 11 as amended above, fulfill the requirement of 35 U.S.C. §112, second paragraph, by particularly pointing out and distinctly claiming the subject matter which Applicant regards as the invention. Withdrawal of the rejection of claims 9-13 under 35 U.S.C. §112, second paragraph, is respectfully solicited.

THE PRIOR ART REJECTIONS

A. The Robertazzi Reference

Robertazzi discloses a load sharing system which minimizes overall costs by assigning segments of a divisible load to distributed processor platforms based on the resource utilization cost of each processor platform. (Abstract, lines 1-4).

Claim 1 recites:

"An apparatus for allocating processing resources of a signal processor to signal processing functions, which are associated with inputted signals, comprising:

a capacity determining means for determining an amount of the processor resources available to be assigned to the signal processing functions;

a load determining means for determining an estimate of an amount of the processing resources needed for each ~~function~~ of the signal processing functions waiting in a queue to be executed;

a prioritization means for prioritizing each of the signal processing functions waiting in the queue to be executed; and

an allocating means, which receives information from said capacity determining means, said loading means, and said prioritizing means, for allocating available processing resources to the signal processing functions waiting in the queue to be executed, based on a hierarchical priority scheme."

Nowhere does Robertazzi disclose, teach or suggest allocating processing resources of <u>a signal processor</u> to <u>signal processing functions</u>, which are associated with inputted signals as recited in claim 1. Robertazzi discloses a distributed system of many processors, each of the processors having a resource utilization cost. In contrast, the present invention claims <u>a signal processor, which allocates signal processing functions</u> associated with inputted signals.

In addition, nowhere does Robertazzi disclose, teach or suggest a capacity determining means, a load determining means, a prioritizing means, and/or an allocating means for processing resources to accommodate <u>signal processing functions</u> as dies the present invention.

For at least the reasons outlined above, Applicant respectfully submits that Robertazzi does not disclose, teach or suggest every feature of claim 1. Accordingly, Robertazzi does not render obvious the subject matter of claim 1 and claims 2-8, which depend from claim 1, under 35 U.S.C. §103(a). Withdrawal of the rejection of claims 1-8 under 35 U.S.C. §103(a) as unpatentable over Robertazzi is respectfully solicited.

B. The Callahan Reference

The Office Actions states that "Robertazzi fails to explicitly teach using the load determination means to support background processing and that Callahan teaches load balancing which supports background processing, which is advantageous because instructions that are common are executed together, which increases efficiency (col. 1, lines 52-68)." (Office Action, page 7, item 18).

In fact, Callhan states "[i]t is advantageous to arrange the microprogram for a particular time slice to handle only specialized parts of the channel program that are specific to a particular controller and to assign a separate time slice to execute the instructions that are common to each of the channel programs (col. 1, lines 52-57).

Nowhere does Callahan disclose, teach or suggest the features of:

"said load determining means calculates a product, for each of j instances, corresponding to each of said inputted signals, where $j = 1$ to m, and for each of k signal processing functions associated with each of said j instances, where $k = 1$ to N, obtained by:

(a)   estimating an amount of processing resource needed to support the execution of the jth instance of the kth signal processing function;

(b)   assigning a value of either zero or one to a multiplicand associated with the jth instance of the kth signal processing function; and

(c)   multiplying the amount of processing resource needed to support the execution of the jth instance of the kth signal processing function by its associated multiplicand and assigning the result to the product associated with the jth instance of the kth signal processing function; and

said load determining means calculates a sub-total sum, for each of the j instances, obtained by:

(d) summing together the products associated with each of the k signal processing functions associated with each of the j instances; and

(e) adding another estimated amount of the processing resource needed to

support background processing associated with each of the j instances to the sum of products of each of the k signal processing functions associated with each of the j instances and assigning the result to the sub-total for each of the j instances," as recited in claim 9.

In fact, all the Callahan describes is a channel processor that operates with six time slices for device oriented processing and a seventh time slice for background processing (col. 2, lines 20-23). In contrast, the background processing, m_0 (Specification, page 8, lines 3-5) of the present invention is associated with each signal processing function k waiting to be executed of every j^{th} instance during every period of time, t. That is, background processing occurs in every period t of the present invention.

Likewise, nowhere does Robertazzi disclose, teach or suggest a load determining means that calculates a product, for each of j instances, corresponding to each of the inputted signals, where j = 1 to m, and for each of k signal processing functions associated with each of the j instances, where k = 1 to N, as recited in claim 9.

For at least the reasons outlined above, Applicant respectfully submits that Robertazzi and Callahan, either individually or in combination, do not teach or suggest every feature of claim 9. Accordingly, Robertazzi and Callahan, either individually or in combination, do not render obvious the subject matter of claim 9 and claims 10-13, which depend from claim 9, under 35 U.S.C. §103(a). Withdrawal of the rejection of claims 9-13 under 35 U.S.C. §103(a) as unpatentable over Robertazzi in view of Callahan is respectfully solicited.

INFORMAL MATTERS AND CONCLUSION

Applicants respectfully submit that claim 11 is amended above to correct the informalities to which the Office Action objected.

In view of the foregoing, Applicant respectfully submits that claims 1-13, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above-identified Application to issue at the earliest possible time.

Should the Examiner find the above-identified Application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes that may be deemed advisable in a <u>telephonic or personal interview</u>. The Commissioner is hereby authorized to charge any deficiencies to Client's Deposit Account No. 20-0668.

Respectfully submitted,

Date: 10/14/2004

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I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: the Commissioner for Patents, United States Patent and Trademark Office, PO Box 1450, Alexandria, Virginia 22313-1450 on October 14, 2004.

Peter A. Balnave